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THE BRUSH BERYLLIUM COMPANY
4301 PERKINS AVENUE
CLEVELAND 3, OHIO

July 29, 1958

The Honorable John A. McCone
Chairman
U. S. Atomic Energy Commission
1901 Constitution Avenue
Washington 25, D. C.

Dear Mr. McCone:

We should like to bring to your attention an aspect of the Atomic Energy Commission's program for research and development of power reactors which involves the relationship of the price of heavy water and the price of beryllium metal. In the Commission's Statement on the Civilian Power Reactor Program which was submitted to the Joint Committee on June 4, 1958, the Commission indicated that its support of a broad base of technological development toward advanced types of nuclear power plants would include not only the whole family of pressurized and boiling water nuclear power installations but also high temperature power reactors. Heavy water is useful primarily in low temperature reactors. On the other hand, beryllium is particularly useful as a moderator and reflector of neutrons at high temperatures. Thus the relative price of the two materials may have a significant impact on the choice of design of reactors and on the level of advanced research and development effort aimed at developing the more efficient high temperature reactors.

Historically, most of the heavy water and beryllium metal of reactor grade used in the United States have so far been produced in government-owned plants. For various reasons, this policy has continued to be necessary as to production of heavy water. As to beryllium, however, the Commission in 1956, in accordance with its established policy of relying on private industry as far as possible, contracted for the construction of new privately-owned facilities for the production of reactor grade beryllium metal. Thereafter, the government-owned plant was shut down and is now being dismantled. At the moment, therefore, we have a situation where the product of a private industry which originated under Commission sponsorship is competing to a substantial extent with the product of a facility which is still owned and operated by the Commission.

We recognize the Commission's responsibility to further the early construction of low-temperature water reactors, on which at the moment the technology is more advanced. In that connection the Commission has established a comparatively low price for heavy water and has also proposed that the ground rules of the third invitation for nuclear power plant proposals under the Power Demonstration Reactor Program be modified to permit waiver of use charges on heavy water even though the reactor is not designed to operate on natural uranium fuel. However, we are fearful that these actions, while perfectly understandable and appropriate in themselves, may have a delaying and adverse effect on the rate of development in advanced reactor technology,

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which in general will tend to involve designs of reactors operation at temperatures high enough to eliminate many current materials of construction and even the use of light and heavy water for moderation and reflection.

During the last few years, the steadily increasing interest in beryllium metal for nuclear applications has been considerably deterred by the high cost of beryllium. This high cost is caused mainly by high labor and overhead expenses resulting from the present low rate of production. Although process improvements and higher recovery yields of beryllium from its ores should be expected, a substantial reduction in the cost of production of beryllium can only be achieved by high production volume.

Accordingly, we recommend that the Commission, in order to off-set the impact of low prices and waiver of charges on government-produced heavy water, include in its power reactor development program, for a limited period of time, a policy of encouraging the use of beryllium metal as a moderator and reflector. Such a policy, which would result in a higher production rate and lower production costs of the metal, should include both a preference for use of beryllium in government projects, even though the present costs in some instances might be higher than if alternative materials were used, and a program of providing additional financial assistance to private projects which now cannot or hesitate to use beryllium because of its comparatively high price. We believe that this would provide substantial encouragement in the development of advanced reactor technology and would constitute an important contribution to our national goal of achieving competitive nuclear power.

This letter is being sent also to the other members of the Commission. In addition, a copy has been provided for the Acting General Manager for his information.

Very truly yours,

/s/

Bengt Kjellgren
President